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ABSTRACT

This newsletter highlights the importance of strength training in keeping older adults healthy and fit, explaining how it can forestall declines in strength and muscle mass, along with their attendant negative impact upon other metabolic functions and activities of daily living. Physical inactivity is common throughout the nation. Approximately 11 percent of cases of heart failure in men and 14 percent in women are attributable to obesity alone. More than half of adults over age 45 years are inadequately active. Injuries to seniors are costly to the health care system and often have serious consequences for the seniors themselves. Aging is associated with marked alterations in body composition and joint structure. Research indicates that regular joint loading and motion are necessary to maintain articular cartilage function and synovial joint range of motion. There is growing recognition of the importance of strength training for all adults in light of the loss of muscle mass in midlife due to sedentary lifestyles. There is no age limit to the benefits of exercise, and regular activity can often slow or reverse the decreased mobility that contributes to disease and disability in old age. Research shows that regular physical activity can reduce the risk of subsequent depression in older adults. Overall, regular enjoyable exercise is the most significant route to better health. (SM)

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GRC News

The newsletter of the Gerontology Research Centre

SIMON FRASER UNIVERSITY AT HARBOUR CENTRE, VANCOUVER, CANADA

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STRENGTH TRAINING: A natural prescription for staying healthy and fit.

by Raymond Adams, BA, MLIS, Information Officer, GRC

Claude Rocan, Director General of the Centre for Healthy Human Development, Health Canada, noted that healthy aging is an issue that concerns everyone since demographic projections show that within the next 40 years, 25% of Canada's society is expected to be 65 years of age or older.[1]

A recent publication by the Health Canada Division of Aging and Seniors, identified four determinants that play key roles in healthy aging: healthy eating, injury prevention, physical activity, and smoking cessation.[2] The same publication goes on to state that, "Scientific evidence increasingly indicates that physical activity can extend years of active independent living, reduce disability and improve the quality of life for older persons" [whereas inactivity] "...leads to declines in bone strength, muscle strength, heart and lung fitness and flexibility...[and] "...is a key contributor to most of the chronic and debilitating diseases associated with aging and for a significant number of preventable deaths".[3] The U.S. Surgeon General has estimated "sedentary living to be as dangerous to one's health as smoking a pack of cigarettes a day".[4] The World Health Organization (WHO) states that it is both beneficial and cost-effective to help sedentary individuals to take up moderate levels of physical activity [such as] walking, gardening and safe activities involving weight lifting.[5] My previous article, "Walking: A Natural Prescription for Staying Healthy and Fit" (*GRC News, 21*(1)), discussed the positive gains from such aerobic activities as walking. This article will deal with the dramatic benefits that have been achieved with strength training which not only appears to forestall declines in strength and muscle mass, along with their attendant negative impact upon other metabolic functions and Activities of Daily Living (ADLs), but is useful for dealing with depression as well!

Physical inactivity is common throughout North American society. In the United States, US Senator Bill Frist (R-Tenn), the chamber's only physician, and other US Senators introduced a bill that Frist says "addresses head on a nationwide epidemic...that is contributing substantially to more than 300,000 deaths per year" declaring obesity the second most preventable cause of death after tobacco use and saying that while "there is no single solution, no magic bullet...better information, improved nutrition, and greater opportunities for physical activity will guarantee progress."[6] To put Frist's figure on the annual mortality rate from obesity into dramatic perspective it should be noted that the United States military in World War II lost approximately 259,000 men and women on all fronts from December 7, 1941 to September 2, 1945.[7] A study, conducted by Dr. Ramachandran S. Vasan and his colleagues from the Framingham Heart Study, Massachusetts, which investigated the relationship between body mass index

Raymond Adams is a CCCP (Canadian Coaching Certification Program) Level 1 coach, Head Coach of the Vancouver 5 Special Olympics Powerlifting Team during the 2000-01and 2001-02 seasons, and an avid weightlifter for the last 30 years.

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Research Focus

The Gerontology Research Centre conducts research on aging and the aged, and consults on research design and program development and evaluation. Research activities are most intense in five areas:

- Aging and the built environment
- Health and aging
- Prevention of victimization and exploitation of the elderly
- Older adult education
- Changing demography and lifestyles

The Centre was established with the help of grants from Imperial Oil, the Real Estate Foundation of B.C., Shoppers Drug Mart and Social Sciences and Humanities Research Council of Canada.

Education

SFU offers a minor, a Post Baccalaureate Diploma and a Masters Degree in Gerontology. All are coordinated by the Gerontology Program which has offices within the Centre.

Information Services

The Gerontology Information Centre, managed by a professional librarian, offers a specialized collection and assistance with information search and retrieval.

Publications

The Centre publishes books, reports, a fact sheet and two newsletters: *GRC News* and *Seniors' Housing Update*.

Conferences

The Centre regularly organizes two conferences: a biennial housing conference and the John K. Friesen Conference which takes place each spring.

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(BMI) and incidence of heart failure in 5881 men and women concluded that approximately 11% of cases of heart failure in men and 14% among women are attributable to obesity alone.[8]

In Canada, information presented by Dr. Sandra O'Brien-Cousins of the Faculty of Physical Education and Recreation, University of Alberta noted that "half of all adults over the age of 45 are inadequately active."[9] Dr. O'Brien-Cousins' claim is supported by a recent government of Canada publication, *Seniors in Canada: A report card*, which shows that the majority of Canadian seniors (70% of women and 67% of men) are inactive[10] as well as by National Population Health Survey (NPHS) data that shows that older adults represent the most sedentary segment of the Canadian adult population with 59% of seniors between the ages of 55 to 64 years of age being inactive, increasing to 74% of seniors who were 75 or older.[11]

Robert Mazzeo (Associate Professor and Associate Chair of the Department of Kinesiology & Applied Physiology at the University of Colorado at Boulder), an exercise physiologist and chairman of the American College of Sports Medicine (ACSM), states that the major health risk for the frail elderly are immobility, falls, and fractures which are related to muscle weakness noting that strength training and balance exercises can help older adults build muscle strength and improve function so that they can safely walk and do other aerobic activities.[12] Of all the causes of seniors' injuries, falls are by far the biggest problem, accounting for over 87% of unintentional injuries resulting in hospitalization for those 71 years of age or over, and 75% of the deaths resulting from injury.

Injuries to seniors are costly to the health care system and often have serious consequences to seniors themselves. The Canadian Fitness and Lifestyle Research Institute (CFLRI) notes that:

- One quarter of deaths from heart disease in 1993 were the result of physical inactivity.
- The 16% increase between 1981 and 1995 in the number of Canadians active enough to reduce the risk of heart disease translated into savings of $700 million over that period and $190 million in 1995 alone.
- The Conference Board of Canada estimated that a 1% increase in physical activity could lead to annual health care savings of $10.2 million for ischemic heart disease (i.e. anemia due to obstruction of the blood supply mainly as a result of arterial narrowing), $877,000 for adult-onset diabetes and $407,000 for colon cancer.[13]

For Canadians 65 years of age or older, direct and indirect cost to the health care system for fall-related injuries alone is estimated at $2.8 billion annually.[14] In 1989-1990, there were 25,000 cases of hip fractures in Canada generating costs of $400 million and resulting in death in over 12% of the cases and 75% of survivors not regaining their prior functional capacity![15]

Aging is associated with marked alterations in body composition including a decline in body weight that is at least partially explained by a process known as sarcopenia.[16] Sarcopenia from the Greek for "flesh reduction", like osteoporosis and arthritis, is a serious degenerative condition that negatively impacts upon physical function (e.g. increased risk for falls and vulnerability to injury) and metabolic function (e.g. increased risk of obesity, impaired glucose intolerance, changes to the body's ability to regulate temperature, and weaker bones) because muscle is the body's most metabolically active tissue.[17] Muscular strength in the back, arm, and legs drops as much as 60%, between the ages of 30 and 80 largely reflecting a progressive loss of muscle mass at an average of 4% per decade from 25 to 50, and 10% per decade thereafter. Along with neuromuscular changes and decreased hormone levels, reduced exercise (particularly contractions against high loads) appears to be responsible. Age-related changes in joint structures (i.e. articular cartilage, ligaments, and synovium or connective tissue) can lead to stiffness, limited range of motion, and increased vulnerability to injury. It has been observed that regular joint loading and motion are necessary to maintain articular cartilage function and synovial joint range of motion whereas reduced activity

adversely alters the mechanical properties of cartilage.[18] In women, one of the more important changes due to the hormonal alterations that occur with menopause is the dramatic decrease in bone mineral density (BMD) that leads to greater risk of hip or vertebral fractures.[19]

promotes muscle weakness that, in turn, causes disability.[24]

There is no age limit to the benefits of exercise. Regular activity can often slow or reverse the decreased mobility that contributes to disease and disability in old age. Clinical research demonstrates that for most elderly

strength (i.e. a function of the muscle's ability to contract) as well as the cross-sectional areas of the quadriceps femoris (i.e. thigh muscles) and elbow flexor muscles were similar in the two groups.[30]

Most heartening of all is research documenting substantial benefits of

There is growing evidence that training of sufficient intensity can increase strength by approximately 5% per session in older individuals which is similar to gains in younger ones.

Twenty years ago, Dr. W.M. Bortz in a review article in the *Journal of the American Medical Association* hypothesized that physical inactivity causes many of the functional losses commonly attributed to aging, "A review of biologic changes commonly attributed to the process of aging demonstrates the close similarity of most of these to changes subsequent to a period of enforced physical inactivity" [which] "prompts the suggestion that at least a portion of the changes that are commonly attributed to aging is in reality caused by disuse and, as such, is subject to correction."[20] Over the last decade, there has been a growing recognition of the importance of strength training for all adults in light of the loss of muscle mass in midlife due to sedentary lifestyles.[21] Research points to the need for interventions to prevent functional decline. For example, Guralnik, et al. (1995), measured lower-extremity function (e.g. tests of walking speed, balance, and ability to rise from a chair) in 1122 subjects aged 71 years and older and found that those who scored poorly were nearly five times more likely to be disabled 4 years later.[22] Similar findings have been reported in successive studies. For example, an American study concluded, "Muscle weakness is extremely common among elderly people, much of it stemming from disease and inactivity" with studies reporting "the prevalence of easily detected leg weakness to range from about 50% among community-living older persons to over 80% among nursing home residents".[23] A recent Dutch study similarly concluded that avoidance of activity

patients, including many who are frail or have concurrent illnesses, a program of aerobic, strength training, and flexibility exercises maintain mobility, improve quality of life, and prolong independence.[25] Important to consider, however, is that according to guidelines issued by the ACSM, the very old or 'frail' elderly should first strengthen the rest of their muscles with a program of resistance exercises before beginning any aerobic activity, such as walking or swimming, to exercise the most important muscle—the heart.[26] Dr. Hagberg and his colleagues were able to show in their study that BMD at critical sites where fractures occur in postmenopausal women (i.e. the lumbar vertebrae and hip) appear to be affected to a larger extent by prolonged low-to-moderate-intensity weight-bearing activity levels than by Hormone Replacement Therapy.[27]

Prof. Mazzeo claims that a common mistake many seniors make when they do strength-training is to use weights that are too light whereas for maximum benefit, people should pick a weight that is about 80 percent of the maximum they can lift one time only (typically, this would be a weight someone can lift at least 10 but no more than 15, times).[28] There is growing evidence that training of sufficient intensity can increase strength by approximately 5% per session in older individuals which is similar to gains in younger ones.[29] One study that compared a group of 68 year-old men who had engaged in 12 to 17 years of strength training with a group of 28 year-old men who were active in aerobic sports, showed that the isometric

strength training even in the tenth decade of life. A now classic study, whose results were presented at the annual meeting of the American Federation for Clinical Research, in Washington DC in 1989, was carried out by Dr. Maria A. Fiatarone and her colleagues who enrolled 10 frail nursing home residents (aged 86-96), from the Hebrew Rehabilitation Center for Aged in Boston MA, in an 8-week high-intensity resistance exercise program.[31] (Currently, Dr. Maria A. Fiatarone Singh is a research scientist at the Nutrition, Exercise Physiology, and Sarcopenia Laboratory, Jean Mayer U.S. Department of Agriculture, Human Nutrition Research Center on Aging at Tufts University.) Of the 9 men and women who completed the study, both the strength as well as the size of their quadriceps (i.e. thigh muscle) increased throughout the program. The program entailed (1) the ability of the subjects to lift a weight through 90 degrees of knee flexion to maximal knee extension from a seated position and (2) a test of functional mobility by (a) measuring the subject's time in rising from a straight backed chair without using his or her arms and (b) their speed during a 6-metre walk.[32] Gains in muscle strength were highly significant and clinically meaningful with the average strength gain at 8 weeks measured at 174% plus/minus 31% on the right leg and 180% plus/minus 33% in the left leg while gains in muscle size of the quadriceps area was 10.9% plus/minus 7.0%.[33] With respect to functional mobility, there was a decrease in walking time from 43.4 plus/minus 25.7 seconds to

29.6 plus/minus 22.4 seconds with two subjects no longer needing canes to walk at the end of the study and one subject who could not initially rise from a chair without use of the arms becoming able to do so.[34]

The therapeutic efficacy of weight-training upon clinical depression has also been studied with positive results. Dr. William J. Strawbridge, of the Public Health Institute, Berkeley, California, and his colleagues, who studied the effect of physical activity on prevalent and incident depression over a 5-year period in 1,947 subjects who were between 50 and 94 years of age, concluded that "Regular physical activity, such as walking, exercising, swimming, or playing active sports for older adults will reduce the risk of subsequent depression".[35]

Singh, et al. (2001) report that in the elderly population there is an advantage to the use of exercise rather than pharmacotherapy as a treatment for depression because of the increased prevalence of medication side effects in geriatric patients (such as the increased risk of falls and hip fractures as reported by Thapa, et al., (1998) and Ray, et al. (1987)) as well as the other beneficial side effects of exercise that have been demonstrated in this age group.[36] The efficacy of exercise as an alternative treatment in clinically depressed young or middle-aged patients has been established in at least eight randomized controlled trials of varying duration that compared aerobic and non-aerobic forms of exercise including one by Blumenthal (1999) using 156 men and women (mean age 57) with major depression comparing aerobic exercise, antidepressant medication, and a combination of medication and exercise that at the end of 16 weeks suggested no significant difference between medication versus exercise and no additive effect of the two.[37]

Singh, et al. (2001) conducted the first controlled resistance training study of greater than 8-weeks duration in a depressed population and the only such study using elderly persons (32 community-dwelling seniors (mean age 71.3) who satisfied the Diagnostic and Statistical Manual of Mental Disorders IV (DSM-IV) criteria for clinical depression) in which test subjects (that were given 10 weeks of supervised weight-lifting exercise followed by 10 weeks of unsupervised exercise) showed a 60% improvement compared with a 30% improvement of control subjects (that attended health lectures for 10 weeks) in a follow-up assessment at 20 weeks made with the Beck Depression Inventory (BDI), the Philadelphia Geriatric Morale Scale, and Ewart's Self Efficacy Scale and with the BDI and physical activity questionnaire at 26 months.[38] The results led Singh and his colleagues to conclude that the exercise group "showed significantly reduced depression compared with the control group at both 20 weeks" (with 73% or 11/15 of the exercise group classified as nondepressed versus 36% of controls) and [in the] 26-month follow-up where the secondary analysis showed that active exercisers demonstrated a trend toward greater long-term response than either exercisers who had stopped lifting weights or controls with BDI results ranging from approximately 17 to 8.[39]

Dr. Bortz cautions that while physical inactivity is not the cause of aging, ("it is wrong to suggest that exercise might halt the fall of the grains of sand in the hourglass,"[40]) exercise may forestall much of its effects ("It is proposed, however, that the aperture may be responsive to the toning influence of physical activity, and consequently the sand may drain more slowly"[41] and to finally conclude that "[t]here is no drug in current or prospective use that holds as much promise for sustained health as a lifetime program of physical exercise".[42] It is the results of studies such as the ones reviewed here that have led Health Canada two decades after Dr. Bortz wrote his article to conclude that, "Regular enjoyable exercise is currently the most significant route to better health, and is a more straightforward and economical means to lifelong health than medication and acute care".[43]

Teach us to live that we may dread
Unnecessary time in bed.
Get people up and we may save
Our patients from an early grave.
RAJ Asher [44]

References

[1] Health Canada, (2002a). *Workshop on healthy aging, part 1: Aging and health practices.* Ottawa: Division of Aging and Seniors, Health Canada, 5.
[2] Health Canada (2002b). *Healthy aging: Physical activity and older adults.* Ottawa: Division of Aging and Seniors, Health Canada, foreward.
[3] Health Canada (2002b), 1.
[4] Health Canada (2002b), 1.
[5] Health Canada (2002b), 6.
[6] Rovner, J. (July 30, 2002). US Senate bill targets obesity epidemic by highlighting nutrition, activity. Reuters Health Information 2002. Retrieved August 8, 2002 from http://www.medscape.com/viewarticle/439484.
[7] Kinder, H., & Hilgemann, W. (1978). *The Penguin atlas of world history, volume II: From the French revolution to the present.* Harmondsworth, Middlesex, England: Penguin.
[8] Reuters Health (2002). Heart failure risk doubled in obese versus normal weight people. Reuters Health Information 2002. Retrieved August 8, 2002 from http://www.medscape.com/viewarticle/439574.
[9] Health Canada (2002a), 13.
[10] National Advisory Council on Aging (Canada) (2001). *Seniors in Canada: A report card.* Ottawa: The Council, 8.
[11] Health Canada (2002b), 1.
[12] Krucoff, C. (March/April 2000). Strengthening the elderly. *Saturday Evening Post, 272*(Issue, 2), p.12. Retrieved October 16, 2002 from Ebsco Research Databases: Academic Search Elite.
[13] Health Canada (2002b), 5.
[14] Health Canada, (2002c). *Healthy aging: Prevention of unintentional injuries among seniors.* Ottawa: Division of Aging and Seniors, Health Canada, 2.
[15] Ulysse, P. J. (1997). *Population aging: An overview of the past thirty years.* Ottawa: Division of Aging and Seniors, Health Canada, 32.
[16] DiPietro, L., & Dziura, J. Exercise: A prescription to delay the effects of aging. *The Physician and Sportsmedicine 28*(10). Retrieved August 20, 2002 from http://www.physsportsmed.com/issues/2000/10_00/dipietro.htm.
[17] Krucoff, C. (March/April 2000).
[18] Buckwalter, J.A. (1997). Decreased mobility in the elderly: The exercise antidote. *The Physician and Sportsmedicine 25*(9). Retrieved August 20, 2002 from http://www.physsportsmed.com/issues/1997/09sep/buck.htm.
[19] Hagberg, J.M., Zmuda, J.M., McCole, S.D., Rodgers, K.S., Ferrell, R.E., Wilund, K.R., & Moore, G.E. (2001). Moderate physical activity is associated with higher bone mineral density in postmenopausal women. *Journal of the American Geriatrics Society 49*, 1411-1417 at 1411.
[20] Bortz II, W.M. (1982). Disuse and aging. *Journal of the American Medical Association. 248*(10), 1203-1208 at 1203.
[21] Krucoff, C. (2000).
[22] Buckwalter, J.A. (1997).
[23] Rubenstein, L. Z. (December, 1999). *Preventing falls and other injuries in older*

Masters and Diploma/Minor Courses in Gerontology

by Anne Marie Barrett, Assistant to the Director/Student Advisor

Codes: C=Distance Education, DOW=Harbour Centre, SFU=Burnaby Campus, 800=graduate course. Offerings are subject to change. Check the website (www.harbour.sfu.ca/gero) for further information on the timetable. For information about enrolling in the Diploma, Masters or Minor in Gerontology contact: Anne Marie Barrett at (604)291-5065 or e-mail geradmin@sfu.ca

	COURSE TITLE	LOCATION	INSTRUCTOR
Fall 2003-3			
GERO 300-3	Introduction to Gerontology	DOW	H Chaudhury
GERO 301-3	Research Methods in Gerontology	DOW	N O'Rourke
GERO 302-3	Health Promotion and Aging	DOW	N O'Rourke
GERO 407-3	Nutrition and Aging	C	S. Crawford
GERO/SA 420-4	Sociology of Aging	C	A Wister
KIN 461-3	Physiological Aspects of Aging	C	Kin Faculty
PSYC 480/980	ST Cognitive Aging	SFU	W Thornton
GERO 802-4	Development and Evaluation of Health Promotion Programs	DOW	A Wister
GERO 810-4	Community Based Housing	DOW	H Chaudhury
GERO 822-4	Families, Communities and Health	DOW	B Mitchell
Spring 2004-1			
GERO 300-3	Introduction to Gerontology	C	H Chaudhury
GERO 400-4	Seminar in Applied Gerontology	DOW	G Gutman
GERO 401-3	Aging and the Built Environment	DOW	H Chaudhury
GERO 402-3	Drug Issues in Gerontology	DOW	L Trottier
GERO 408-4	Families and Aging	DOW	B Mitchell
GERO 411-3	ST Mental Health and Aging	DOW	N O'Rourke
GERO/SA 420-4	Sociology of Aging	C	A. Wister
PSYC 357-3	Psychology of Adulthood & Aging	SFU	W Thornton
GERO 801-4	Health Policy and Applied Issues in Gerontology	DOW	G Gutman
GERO 803-4	Analytical Techniques for Gerontology Research	DOW	A Wister
GERO 811-4	Institutional Living Environments	DOW	H Chaudhury
GERO 820-4	Principles and Practices of Health Promotion	DOW	N O'Rourke

adults: Research and policy priorities. Paper presented at Promoting independence & quality of life for older persons, Arlington, VA, 5.

[24] Steultjens, M.P., Dekker, J., & Bijlsma, J.W. (2002). Avoidance of activity and disability in patients with osteoarthritis of the knee: The mediating role of muscle strength. *Arthritis and Rheumatism* 46(7), 1784-8 at 1784.

[25] Buckwalter, J.A. (1997).

[26] Krucoff, C. (2000).

[27] Hagberg, J.M., et al. (2001), 1417.

[28] Krucoff, C. (2000).

[29] Buckwalter, J.A. (1997).

[30] Buckwalter, J.A. (1997).

[31] Fiatarone, M.A., Marks, E.C., Ryan, N.D., Meredith, C.N., Lipsitz, L.A., Evans, W.J. (1990). High-intensity training in nonagenarians: Effects on skeletal muscle. *Journal of the American Medical Association, 263*(22), 3029-3034.

[32] Fiatarone, M.A., et al. (1990), 3030.

[33] Fiatarone, M.A., et al. (1990), 3031-2.

[34] Fiatarone, M.A., et al. (1990), 3032.

[35] Chard, M. Depression risk among elderly reduced with increasing physical activity. Reuters Health Information 2002. Retrieved August 27, 2002 from http://www.medscape.com/viewarticle/440657_print.

[36] Singh, N.A., Clements, K.M., & Fiatarone Singh, M.A. (2001). The efficacy of exercise as a long-term antidepressant in elderly subjects: A randomized, controlled trial. *Journal of Gerontology: Medical Sciences, 56A*(8), M497-M504 at M498.

[37] Singh, N.A., et al. (2001), M497.

[38] Singh, N.A., et al. (2001), M497.

[39] Singh, N.A., et al. (2001), M502.

[40] Bortz II, W.M. (1982). Disuse and aging. *Journal of the American Medical Association, 248*(10), 1203-1208 at 1206.

[41] Bortz II, W.M. (1982), 1206.

[42] Bortz II, W.M. (1982), 1203.

[43] Health Canada (2002b), 1.

[44] Asher, R.A.J. (1947). The dangers of going to bed. *British Medical Journal, 2*, 967-968 at 968.

Recent Centre Activities

COMINGS & GOINGS

Mykle Ludvigsen has left the Centre. We wish him the very best in his new position in the Public Education and Communications Department of the Canadian Mental Health Association—BC Division.

VISITORS TO THE CENTRE

Dr. **Shigeo Hori**, Associate Professor, Department of Lifelong Education at Osaka University of Education, is at the GRC for three months to study educational gerontology.

GRANTS & CONTRACTS

• ***Meaning of home among immigrant older adults in Canada***
PI: **Habib Chaudhury**
Funding Source: President's Research Grant, SFU ($9,995)

• ***The use of single patient rooms versus multiple occupancy rooms in acute care environments***
PIs: **Habib Chaudhury** and **Atiya Mahmood**
Funding Source: Coalition of Health Environments Research (CHER) (US$30,000)

• ***Addressing distinct housing needs: An evaluation of senior's housing in the south asian community***
Pis: **Habib Chaudhury** & **Atiya Mahmood**. Research Associate: **Karen Kobayashi**
Funding Source: Canada Mortgage and Housing Corporation (CMHC) ($25,000)

CONFERENCE PRESENTATIONS

Presentations at the 31st Annual Scientific and Educational Meeting of the Canadian Association on Gerontology, Montreal, QC; October 2002.

Bingham, P., & **Doyle, V.** *The redesign of residential care services and the implementation of supportive living options for continuing care clients in Victoria, BC.*

Brink, S. *Elder care: The nexus for family, work and health policy.*

Gnaedinger, N. *Canada mortgage and housing's senior seminars: "Crossing bridges."*

O'Rourke, N. *An integrated model of well-being among older adults.*

O'Rourke, N. *Gender equivalence of responses to a brief version of the Zarit Burden Interview.*

O'Rourke, N. *Personality and socio-demographic variables as antecedents of well-being.*

O'Rourke, N. *Predictors of burden among a representative sample of dementia caregivers.*

Spencer, C. *Health promotion or health tyranny? The case of tobacco and alcohol use among seniors.*

Ward Hall, C., & **Spencer, C.** *Steps to safety and security of seniors in rental housing: Issue identification and resource development.*

Other Conference Presentations

Beattie, B.L., Sauter, A., **Gutman, G.M.**, Donald, A., McGrail, K., & Hertzman, C. (2002, July). *Linkage of clinical and administrative health databases to evaluate the effect of self-rated cognition and function on health care utilization cost per day at risk.* Poster presented at the 8th International Conference on Alzheimer's Disease and Related Disorders, Stockholm, Sweden.

Brink, S. (2002, September). *Great expectations for four score years and ten—coming...ready or not.* Keynote address presented at the 15th National conference of Aged and Community Services Australia, Adelaide, Australia.

Brink, S., & **Gutman, G.M.** (2002, April). *Achieving barrier-free environments—the Canadian experience.* Paper presented at the Valencia Forum, Valencia, Spain.

Cappeliez, P., **O'Rourke, N.**, & Guindon, S. (2002). *Symptômes dépressifs et santé physique des aidants familiaux de patients atteints de démençe: Analyse longitudinale des effets réciproques.* Poster presented at the VIIème Congrès International Francophone de Gérontologie, Brussels, Belgium.

Gee, E.M., & **Mitchell, B.A.** (2002, April). *Under one roof: Intergenerational exchanges and interdependence in multigenerational families.* Paper presented at the 73rd annual meeting of the Pacific Sociological Association, Vancouver, BC.

Gutman, G.M. (2002, September). *Access to health care and education and training of primary health care workers regarding older persons.* Plenary presentation on behalf of NGO Community, United Nations Economic Commission for Europe Ministerial Conference on Ageing, Berlin, Germany.

Gutman, G.M. (2002, April). *The role of universities in gerontology/geriatrics education: Past and future.* Paper presented at the invited symposium on Education and Training for an Ageing World, Valencia Forum, Valencia, Spain.

Holliday, P., **Mihailidis, A.**, Rolfson, R., & Fernie, G. (2002, November). *Does sideways movement increase mobility and manoeuverability in a powered wheelchair?* Paper presented at Gerontechnology 2002—The International Society for Gerontechnology Conference, Miami Beach, FL.

Mihailidis, A., & Fernie, G. (2002, June – July). *An intelligent cognitive orthosis for persons with moderate-to-severe dementia: Results and recommendations.* Paper presented at the Rehabilitation Engineering and Assistive Technology Society of North America conference, Minneapolis, MN.

Mihailidis, A. (2002, July). *The importance of context-aware principles in the development of cognitive devices.* Panel presentation at The Fifth International ACM SIGCAPH Conference on Assistive Technologies, Edinburgh, Scotland.

Mihailidis, A. (2002, September). *The development of an intelligent supportive home environment for older adults with dementia.* Paper presented at the PTechMed Show, London, ON.

Mihailidis, A. (2002, November). *Intelligent supportive home environments for older adults with dementia: Current and future research.* Paper presented at Gerontechnology 2002 —The International Society for Gerontechnology Conference, Miami Beach, FL.

Mitchell, B.A. (2002, June). *Home but not alone: Economic and socio-cultural aspects of Canadian young adults sharing parental households.* Paper presented at the annual meetings of the Congress of the Social Sciences and Humanities, University of Toronto.

O'Rourke, N. (2002, July). *Longitudinal course of depressive symptoms among a representative sample of dementia caregivers.* Paper presented at the 8th International Conference on Alzheimer's Disease and Related Disorders, Stockholm, Sweden.

O'Rourke, N. (2002, August). *Personality variables and perceived control as predictors of marital aggrandizement.* Poster presented at the annual meeting of the American Psychological Association, Chicago, IL.

Spencer, C. (2002, November). *Is what we have in Canada working? A look at the use of special legislation to protect older persons in care from abuse and neglect.* Paper presented at the Ontario Elder Abuse Conference, Toronto, ON.

Spencer, C. (2002, November). *STEPS: Understanding victimization of seniors in rental housing.* Paper presented at the Ontario Elder Abuse Conference, Toronto, ON.

PUBLICATIONS

Gee, E.M., & Mitchell, B.A. (2003). One roof: Intergenerational exchanges and interdependence in multi-generational families. In M. Lyons (Ed.), *Voices: Essays on Canadian families*, 2nd edition. Toronto: Nelson-Thompson Publishing.

Holliday, P., **Mihailidis, A.**, Rolfson, R., & Fernie, G. (2002). Does sideways movement increase mobility and manoeuverability in a powered wheelchair? *Gerontechnology, 2*(1), 99.

Low, G., & **Gutman, G.M.** (2003). Couples' ratings of chronic obstructive pulmonary disease patients' quality of life. *Clinical Nursing Research, 12*(1), 28-48.

Mihailidis, A. (2002). Intelligent supportive home environments for older adults with dementia: Current and future research. *Gerontechnology, 2*(1), 133.

Mihailidis, A., & Fernie, G. (2002). Context-aware assistive devices for older adults with dementia. *Gerontechnology, 2*(2), 173-189.

Mitchell, B.A. (2003). Life course theory. In J.J. Ponzetti (Ed.), *The international encyclopedia of marriage and family relationships*, 2nd ed. New York: Macmillan Reference, USA.

Mitchell, B.A. (2003). Would I share a home with an elderly parent? Exploring ethnocultural diversity and intergenerational support relations during young adulthood. *Canadian Journal on Aging, 22*(1), 69-82.

O'Rourke, N., & Tuokko, H.A. (2003). Psychometric properties of an abridged version of the Zarit Burden Interview within a representative Canadian caregiver sample. *The Gerontologist, 43*(1), 121-127.

Spencer, C. (2003). Tips of the trade series: Understanding memory problems. *Infolink— Newsletter of the BC Nonprofit Housing Association, 10*(1), 23.

M.A. THESES

Assaly-Lawrence, Michele (2002). *An examination of the subjective health consequences of retiring to caregive.* M.A. Thesis, Gerontology Program, Simon Fraser University. (Supervisor: A. Wister).

Social and demographic trends suggest that increasingly adults will be caregivers of older adults and paid workers. For some, retirement timing will be precipitated by caregiving responsibilities. This thesis examines the long-term subjective health consequences of retiring to provide caregiving support to a family member. Bivariate and multivariate analyses were performed to test four hypotheses that people who retired to caregive (n=530) compare unfavorably to people who retired for other reasons (n=5,423) on indices of subjective health. Dependent variables were: perceived stress, self-rated health, life satisfaction and emotional well-being. The consequences to subjective health are defined as long-term, given that the average length of retirement in both groups was over 10 years.

The hypotheses developed for this thesis were guided by life course theory. This theory informs how off-timed and stressful events can effect health and well-being in later life. It was postulated that unexpected and/or difficult caregiving responsibilities in later life, together with premature retirement, constitute a potentially stressful event that may have lasting health effects.

In the bivariate analyses, weak associations were found between retiring to caregive and perceived stress, emotional well-being and life satisfaction. Results reveal that retiring to caregive negatively impacted all three. The fourth dependent variable, self-rated health was not statistically significant at the bivariate level. At the multivariate level, other variables were included to account for the potentially confounding effects of sociodemographic and retirement factors, stressors, and social support. Results for perceived stress and emotional well-being were in the expected direction. The odds of perceiving life as very stressful were slightly increased among those who retired to caregive. Also, well-being was poorer among those who retired for caregiving reasons. Notably, these two hypotheses were supported when controlling for the effect of current caregiving. Retiring to caregive did not have a statistically significant impact on self-rated health and life satisfaction in the multivariate analyses.

Overall, this thesis provided modest support for the hypothesis that retiring to caregive has long-term implications for subjective health. Life course theory proved useful as a framework for understanding how off-timed events may have lingering effects on current stress and emotional well-being. The implications of this thesis are that efforts are needed to help caregivers retain employment if desired, and reduce the strain of caregiving activities that lead caregivers to retire early. Recommendations are made for future research, which include collecting detailed caregiving data over time.

Balfour, Judith. (2002). *Painful conditions in older adults with dementia: Are analgesics and psychotropics inappropriately prescribed?* M.A. Thesis, Gerontology Program, Simon Fraser University. (Supervisor: G. Gutman).

This thesis examines prescription of analgesics and psychotropics among older adults with painful conditions, focusing on the relationship between medication use and cognitive status. Previous research suggests that pain is undertreated among older adults with cognitive impairment and that the consequences of undertreated pain include 'problem' behaviours, potentially misidentified as dementia-related. This thesis hypothesizes that among older adults with arthritis, the presence of Alzheimer's disease is a barrier to prescription of analgesics, specifically nonsteroidal anti-inflammatory drugs (NSAIDs) and acetaminophen. Unrelieved pain manifests as behaviours which are managed with psychotropics, specifically neuroleptics and benzodiazepines.

The data used in this thesis were obtained from the Canadian Study of Health and Aging (1991/1992). The study sample consisted of 1,475 older adults categorized on the basis of the presence or absence of arthritis or rheumatism and cognitive status: cognitively intact; probable, or possible Alzheimer's disease.

Logistic regression analyses indicated that likelihood of NSAID use was lower among those with Alzheimer's disease (OR = .56) and those taking benzodiazepines (OR = .60). Likelihood of acetaminophen use was lower with benzodiazepine use (OR = .60), higher among institutional residents (OR = 1.4) and increased with age (OR = 1.04). Likelihood of neuroleptic use increased with frequency of dementia-related behaviours (OR = 1.02), but decreased with age (OR = .95). Likelihood was higher among those with moderate (OR = 5.6) and severe (OR = 20) compared with mild dementia and among institutional residents (OR = 2.5). Likelihood of benzodiazepine use was greater among institutional residents (OR = 2.3) and lower among those with severe dementia (OR = .36). Neither presence of arthritis nor prescription of analgesics emerged as a statistically significant predictor of prescription of either psychotropic.

Results suggest reasons to be both encouraged and concerned. It is encouraging that pain does not seem to be misidentified and treated inappropriately with psychotropics, but the high use of neuroleptics among those with severe dementia raises some concerns.

Santi, Selena Marie (2002). *Online bulletin board systems: An effective resource for geropsychiatric nurses working in long-term care?* M.A. Thesis, Gerontology Program, Simon Fraser University. (Supervisor: A. Wister).

As Canada's population ages and the healthcare system undergoes reform, increasing demand is placed on registered nurses working in long-term care to provide care to seniors with complicated cognitive and behavioural needs. Although the field of geriatric nursing has expanded with the growth of the senior's population, few nurses feel that they have sufficient information and support to provide adequate care to this population. The goal of this study is to determine whether an Online Bulletin Board System (BBS) is an effective means of meeting nurses' needs for information, networking and support. Meeting these needs is also expected to result in increased perceived levels of care provision efficacy and job satisfaction.

A multi-phase sampling frame was used to recruit 42 participants nationwide. The participants were divided into two groups with 17 in the control group and 25 in the intervention group. The intervention consisted of providing nurses with access to an Online BBS over a four and-a-half month period. The Online BBS was designed to allow nurses to share geropsychiatric-based information and network within a supportive environment. Data was collected through a pretest and posttest questionnaire, as well as from postings and responses made to the Online BBS. Repeated measures analyses was used to test the effectiveness on four dependent variables with results suggesting that the Online BBS had a positive effect on reducing the frequency of information needs while increasing nurses' sense of perceived care provision efficacy.

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The SFU Gerontology Research Centre "Senior Leadership" Award recognizes the contribution that British Columbia seniors make as volunteers. Seniors eligible for nomination must be BC residents who have contributed their time and experience to Simon Fraser University or a post-secondary institution elsewhere in the province and/or who have provided exemplary volunteer service on behalf of their peers. Nominations are sought from any past and current SFU Gerontology Centre and Program faculty and staff, currently enrolled Gerontology students, Gerontology Program alumni as well as from BC seniors groups and seniors advocacy organizations. See our website: http://www.harbour.sfu.ca/gero/senior_leadership_award.htm

SUBMIT NOMINATIONS TO:
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